OFFICE OF THE DEPARTMENT OF DEFENSE COORDINATOR
FOR DRUG ENFORCEMENT POLICY AND SUPPORT

1510 DEFENSE PENTAGON
WASHINGTON DC 20301-1510

22 OCT 1996

MEMORANDUM FOR UNDER SECRETARY OF THE NAVY (ATTN: N323)
ARMY DEPUTY CHIEF OF STAFF FOR PERSONNEL
(ATTN: DAPE-HR)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE FOR
FORCE MANAGEMENT AND PERSONNEL

SUBJECT: Amphetamine/Methamphetamine Screening in Department of Defense Drug Testing Laboratories

The presence of ephedrine, pseudoephedrine, and phenylpropanolamine, commonly found in over-the-counter (OTC) cold medications, can interfere in the amphetamines screening assay. While these compounds will not be mistaken for amphetamine or methamphetamine in the confirmation procedures by gas chromatography/mass spectrometry (GC/MS), the presence of these OTC medications results in unnecessary testing in a work-intensive area of the drug laboratories. The use of an oxidizing agent (periodate) to remove the OTC medication compounds from the urine is a procedure that can be employed.

The periodate should only be used in the second screening immunoassay on the AU800. The recommended protocol for the manual addition of periodate to a fresh aliquot of the presumptive positive specimen prior to the rescreen assay on the Olympus AU800 is attached. The use of periodate will not interfere with the detection of designer analogues or isomers of amphetamine and methamphetamine. The addition of periodate to the microparticle beads reagent is not recommended at this time until further studies are conducted and approval granted from this office. For additional information regarding the use of periodate, please contact Captain John Jemionek, MSC, USN at 703-693-1917 or DSN 223-1917. Your continued support of the DoD Demand Reduction Program is appreciated.

Robert E. Newberry
Principal Director for
Drug Enforcement Policy and Support

Attachment:
As stated

CF:
MEDCOM, ATTN: COL Jacobs
NEHC, ATTN: CDR Past
AFSG, ATTN: COL Butler
Commander, FTDTL, Fort George G. Meade
Director, FTDTL, Tripler AMC
Commanding Officer, NDSL Jacksonville
Commanding Officer, NDSL Great Lakes
Commanding Officer, NDSL San Diego
Director, AF Drug Testing Laboratory, Brooks AFB
Chief, DoD QA Laboratory, AFIP

AMPHETAMINES RETESTING USING PERIODATE ON THE AU800

Preparation of 0.5 M sodium metaperiodate solution. Below are two procedures for the preparation of periodate oxidizing reagent. Periodate is best solubilized in a weakly acidic solution of either HCl or acetate buffer, pH 4.5. The oxidizing agent provided with the Roche methamphetamine kits is in 0.025 M acetate buffer.

Materials: sodium metaperiodate (fresh stock recommended)
HCl solution 3.2×10^{-5} N HCl

The sodium metaperiodate is added a little at a time to approximately 50-100 ml of 3.2×10^{-5} N HCl in a 125 ml Erlenmeyer flask immersed in a large beaker of water at 30-35°C. The 3.2×10^{-5} N HCl is prepared by adding 20 ul of 6 N HCl to 375 ml of distilled water. The mixture is stirred magnetically between additions of the sodium metaperiodate. The suspension of sodium periodate is poured into a 250 ml volumetric flask. The Erlenmeyer flask is rinsed with additional HCl solution and the washings added to the volumetric flask. The weak HCl solution is added to bring the final volume to 250 ml. The solution is mixed on a magnetic stirrer. A small amount did not dissolve. DO NOT REFRIGERATE THE SOLUTION AS THE PERIODATE WILL CRYSTALLIZE OUT OF SOLUTION. Note: 0.5 M sodium periodate is below the solubility limit of 14.4 g sodium periodate per 100 ml at 25° C.

An alternative method is to use 0.025 M sodium acetate buffer, pH 4.5 as the solvent instead of the weak HCl solution. Similar to above, slight warming of the acetate buffer may be required to bring the metaperiodate into solution.

Periodate is added to the urine sample on 10% v/v basis (200ul to 2 ml of urine or 500 ul to 5 ml of urine, mix and incubate at room temperature for 15-20 minutes before reassay on the Olympus AU800. The use of a control containing pseudoephedrine, ephedrine, and phenylpropanolamine is recommended for inclusion among the test samples during the second Olympus AU800 screen to monitor the ability of periodate to eliminate interference from these compounds.

References:

Roche Diaagnostic Systems, Inc., Somerville, NJ, Information Insert, Methamphetamine Abuscreen (High Specificity), October 1994.

G.H. Wimbish, et al., "Analyses of Amphetamines with ONLINE Reagents Using Periodate Treatment on the Hitachi 717." Proceedings of the 1994 Joint TIAFT/SOFT International Meeting, pp 431- 435, 1994.

B.D. Paul, et al., "Amphetamines as an artifact of methamphetamine during periodate degredation of interfering ephedrine, pseudoephedrine, and phenylpropanolamine: An improved procedure for accurate quantitation of amphetamine in urine." J.Anal.Tox., 18:331-336, 1994.